Simple One Step Synthesis of Magnetic-optical Dual Functional ZIF-8 in Sodalite Phase for Magnetically Guided Targeting Bioimaging and Drug Delivery

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(C) days and table of N, Zn, O element content in the recovered powder after incubation in PBS (pH = 5) for (0, 1, 3) days

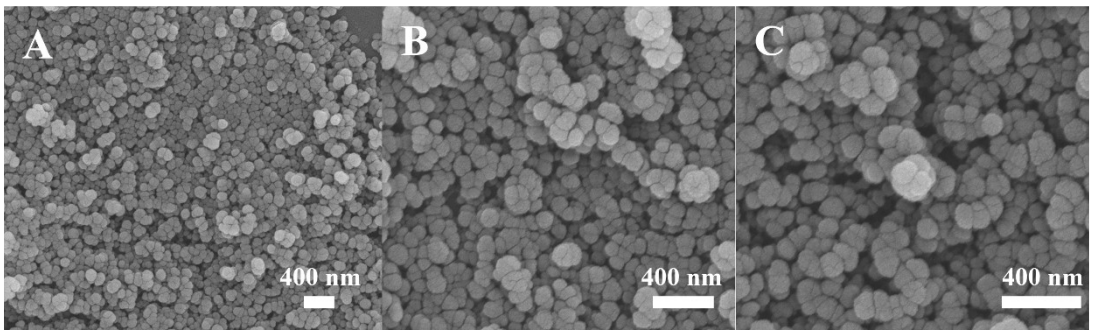


Figure S1 SEM images of ZIF-8with different magnifications (A, B, C)

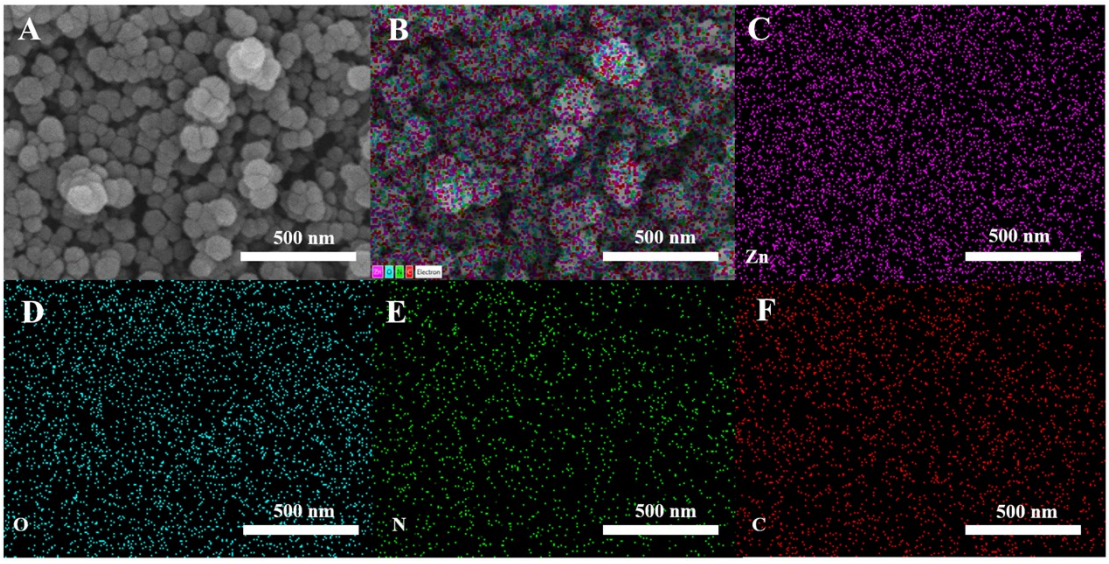


Figure S2 SEM images of ZIF-8 (A), SEM-EDS images of ZIF-8 (B, C, D, E, F), Map Sum Spectrum of ZIF-8(G)

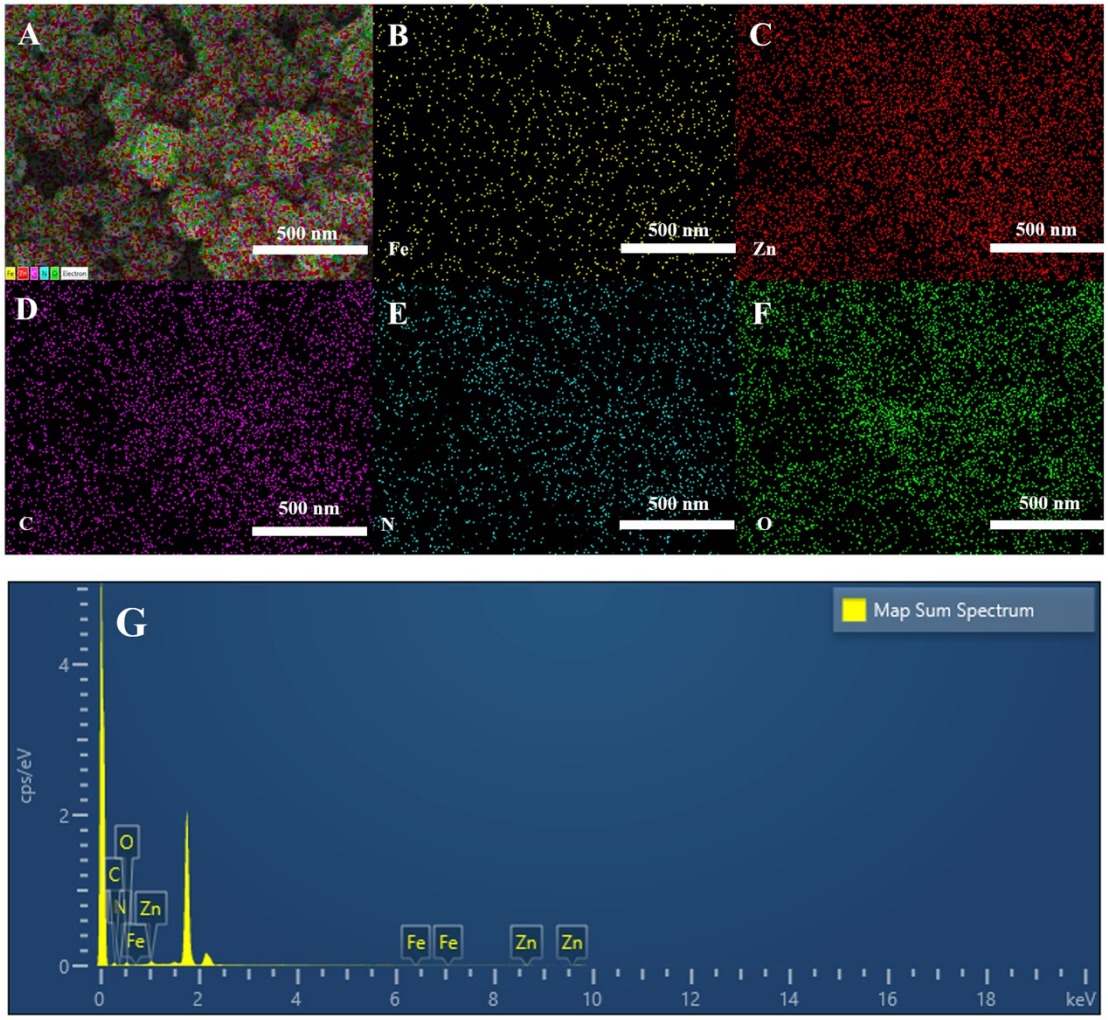


Figure S3 SEM-EDS images of DOX/Fe_3O_4@ZIF-8 (A, B, C, D, E, F), Map Sum Spectrum of DOX/Fe_3O_4@ZIF-8 (G)

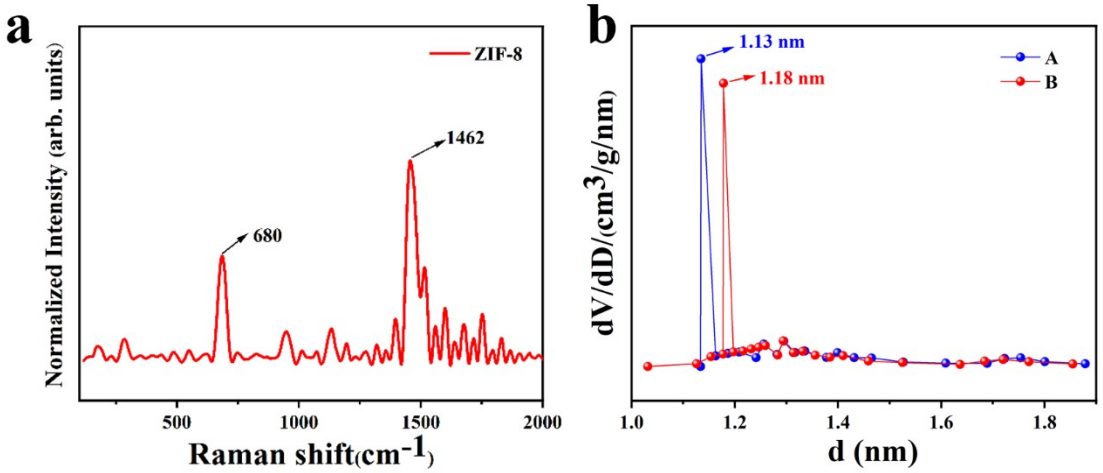


Figure S4 (a) Raman spectra of ZIF-8; (a) Pore size distribution ZIF-8 (A) and DOX/Fe_3O_4@ZIF-8 (B)

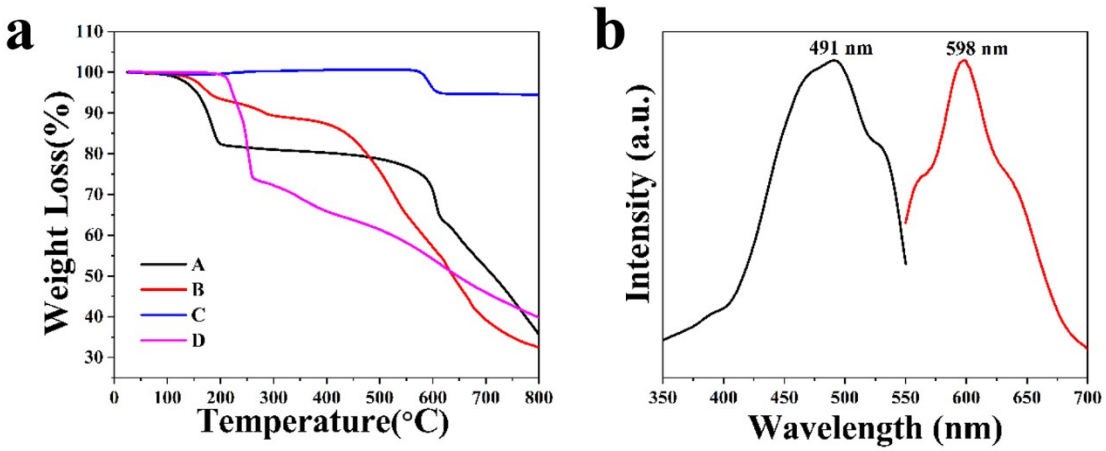


Figure S5 (a) The TGA curves of ZIF-8 (A), DOX/Fe_3O_4@ZIF-8 (B), Fe_3O_4 (C) and DOX (D); (b) The excitation and emission spectra of DOX/Fe_3O_4@ZIF-8

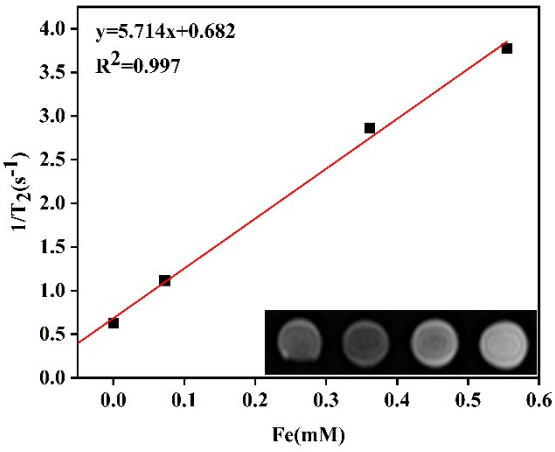


Figure S6 Relaxation rate $1/T_2$ versus concentrations of Fe. T_2-weighted MRI of DOX/Fe_3O_4@ZIF-8 with diverse Fe concentrations in vitro (the inset)

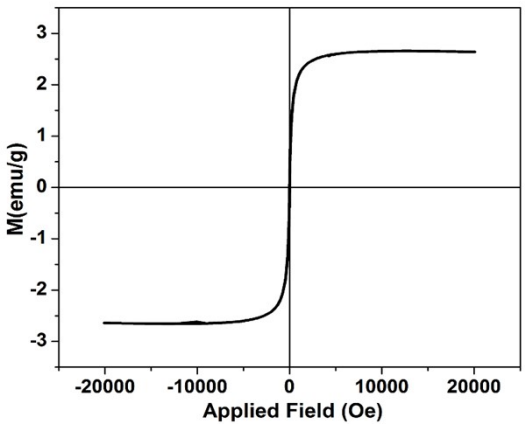


Figure S7 The magnetic hysteresis loops of DOX/Fe_3O_4@ZIF-8 measured at 300 K

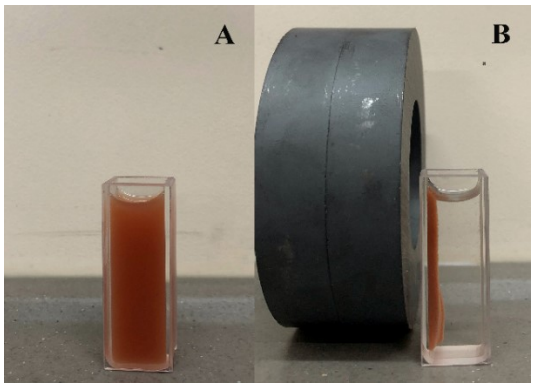


Figure S8 The inset shows photographs of the DOX/Fe_3O_4@ZIF-8 dispersed in water with an external magnetic field

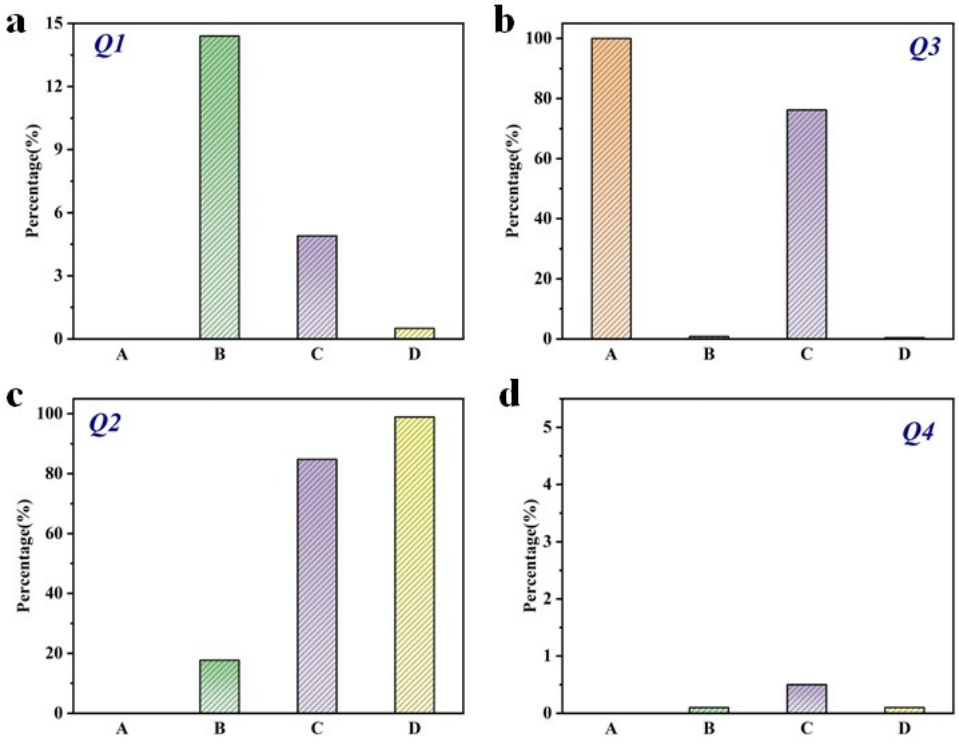


Figure S9 Relative quantitative analysis of Dead (a), Live (b), Late apoptosis (c) and early apoptosis (d)

Table S1 The percentage of Dead, Late apoptosis， Live and early apoptosis in Control, DOX, ZIF-8 and DOX/Fe_3O_4@ZIF-8

Material	Dead/Q1(%)	Late Apop/Q2(%)	Live/Q3(%)	Early Apop/Q4(%)
Control	0	0	100	0
ZIF-8	3.6	17.7	78.3	0.4
DOX	4.9	18.4	76.2	0.5
DOX/Fe_3O_4@ ZIF-8	0.5	98.9	0.4	0.1

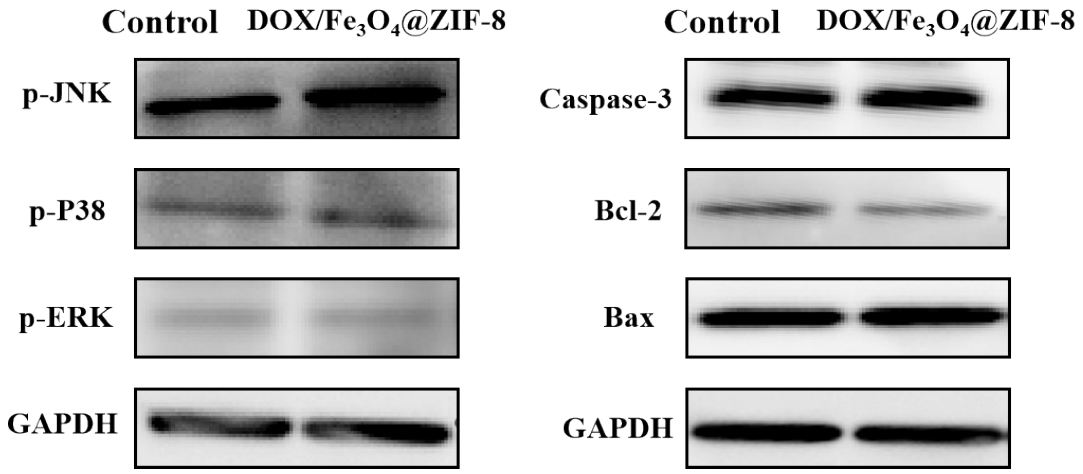
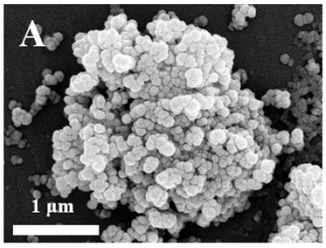
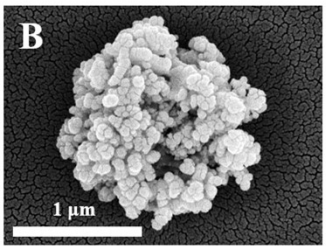


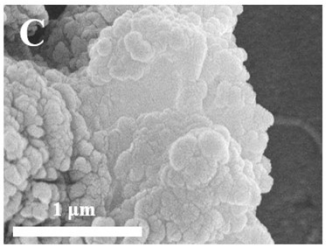
Figure S10 Effect of DOX/Fe_3O_4@ZIF-8 on p-JNK, p-P38, p-ERK, Caspase-3, Bcl-2, and Bax HepG2 cells were treated with DOX/Fe_3O_4@ZIF-8 for 10 min and 4 h



Element	Weight %
N	25.50
O	48.68
Zn	25.82



Element	Weight %
N	5.13
O	66.01
Zn	28.86



Element	Weight %
N	0.06
O	64.31
Zn	35.63

Figure S11 SEM images of ZIF-8 after incubation in PBS (pH = 5) at 0 (A), 1 (B), 3 (C) days and table of N, Zn, O element content in the recovered powder after incubation in PBS (pH = 5) for (0, 1, 3) days